Infotrix – Cloud AWS Internship

TASK 1

Name : Abirami j

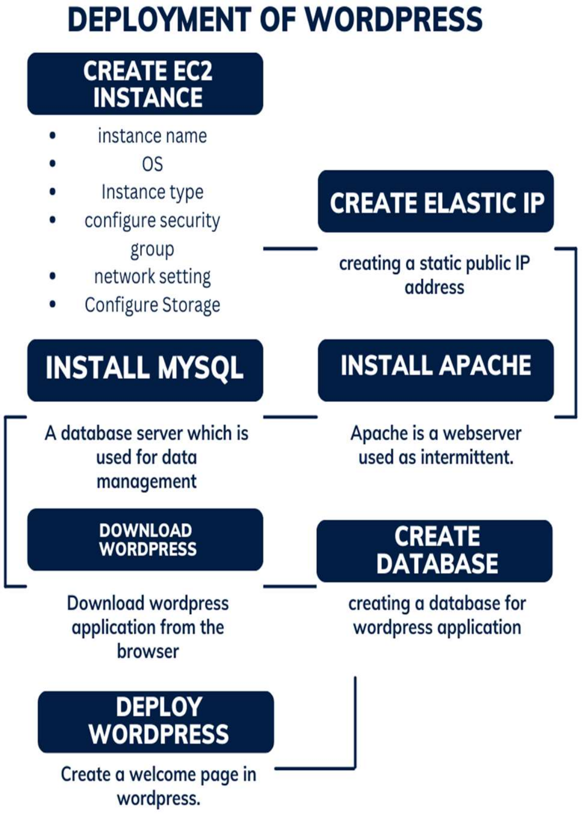
PREREQUISITES:

To create a free-tier AWS account

TASK STATEMENT:

- ❖ Deploy application in monolithic and microservices architecture
- ❖ Description:
  - For monolithic: 1 EC2 instance, deploy wordpress and MYSQL on the same instances
  - For microservices: 2 EC2 instance, 1 for wordpress and 1 for MYSQL
  - Configure the necessary security group for the instances
  - EC2 instance type: t2-micro, AMI: ubuntu-*
- ❖ Create a welcome page in wordpress that will be the homepage

TASK FLOW

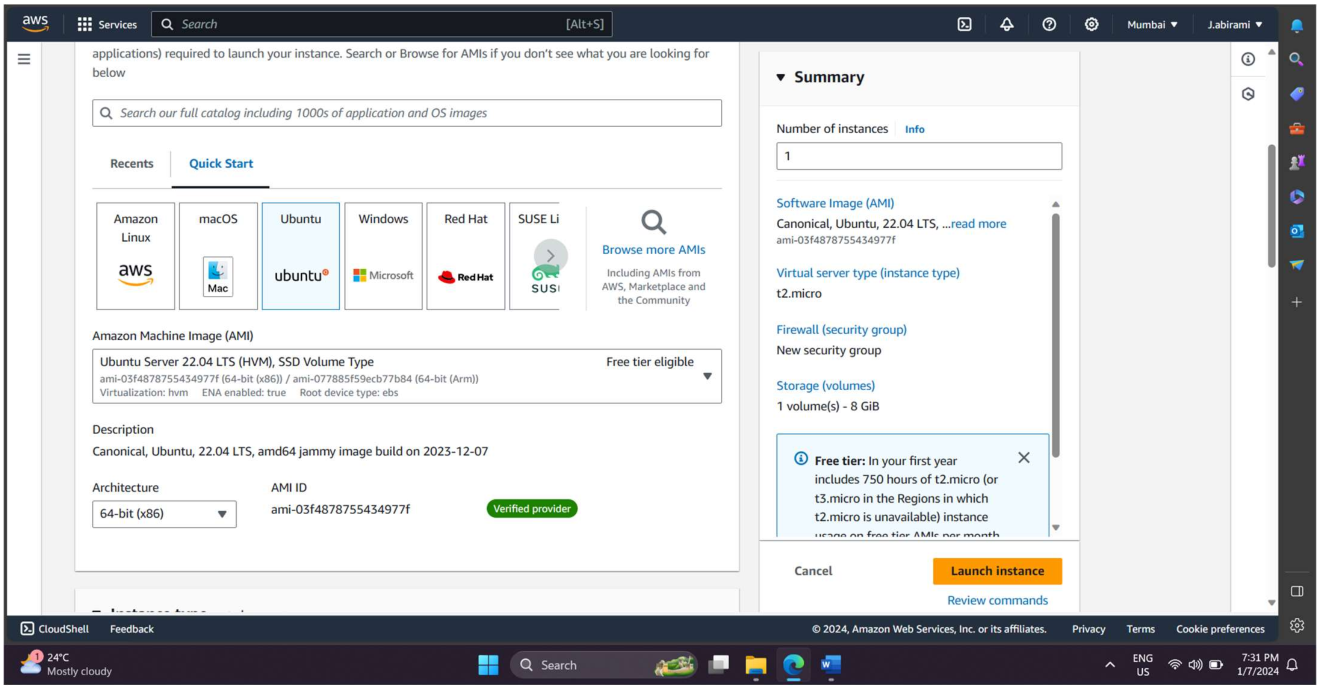

DEPLOYMENT OF WORDPRESS
CREATE EC2 INSTANCE
instance name
OS
Instance type
configure security group
network setting
Configure Storage
CREATE ELASTIC IP
creating a static public IP address
INSTALL MYSQL
A database server which is used for data management
INSTALL APACHE
Apache is a webserver used as intermittent.
DOWNLOAD WORDPRESS
Download wordpress application from the browser
CREATE DATABASE
creating a database for wordpress application
DEPLOY WORDPRESS
Create a welcome page in wordpress.

Monolithic Architecture:

1. **Create 1 EC2 instance**

1.1 Assign instance name – Wordpress

1.2 Assign AMI – Ubuntu



applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type — Free tier eligible
ami-03f4878755434977f (64-bit (x86)) / ami-077885f59ecb77b84 (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2023-12-07

Architecture: 64-bit (x86)

AMI ID: ami-03f4878755434977f — Verified provider

▼ Summary

Number of instances Info: 1

Software Image (AMI)
Canonical, Ubuntu, 22.04 LTS, ...read more
ami-03f4878755434977f

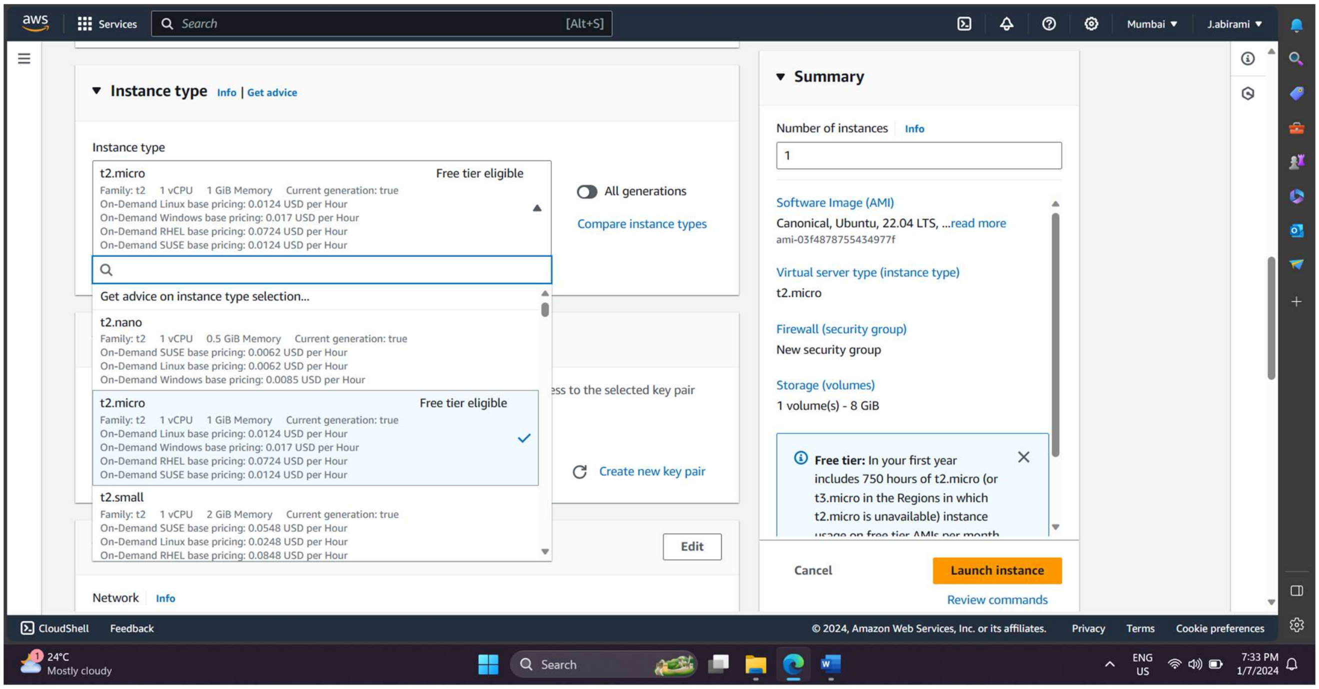
Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month

1.3. Assign EC2 instance type – t2.micro



▼ Instance type Info | Get advice

Instance type

t2.micro — Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Linux base pricing: 0.0124 USD per Hour
On-Demand Windows base pricing: 0.017 USD per Hour
On-Demand RHEL base pricing: 0.0724 USD per Hour
On-Demand SUSE base pricing: 0.0124 USD per Hour

Get advice on instance type selection...

t2.nano
Family: t2 1 vCPU 0.5 GiB Memory Current generation: true
On-Demand SUSE base pricing: 0.0062 USD per Hour
On-Demand Linux base pricing: 0.0062 USD per Hour
On-Demand Windows base pricing: 0.0085 USD per Hour

t2.micro — Free tier eligible ✓
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Linux base pricing: 0.0124 USD per Hour
On-Demand Windows base pricing: 0.017 USD per Hour
On-Demand RHEL base pricing: 0.0724 USD per Hour
On-Demand SUSE base pricing: 0.0124 USD per Hour

t2.small
Family: t2 1 vCPU 2 GiB Memory Current generation: true
On-Demand SUSE base pricing: 0.0548 USD per Hour
On-Demand Linux base pricing: 0.0248 USD per Hour
On-Demand RHEL base pricing: 0.0848 USD per Hour

ess to the selected key pair

Network Info

▼ Summary

Number of instances Info: 1

Software Image (AMI)
Canonical, Ubuntu, 22.04 LTS, ...read more
ami-03f4878755434977f

Virtual server type (instance type)
t2.micro

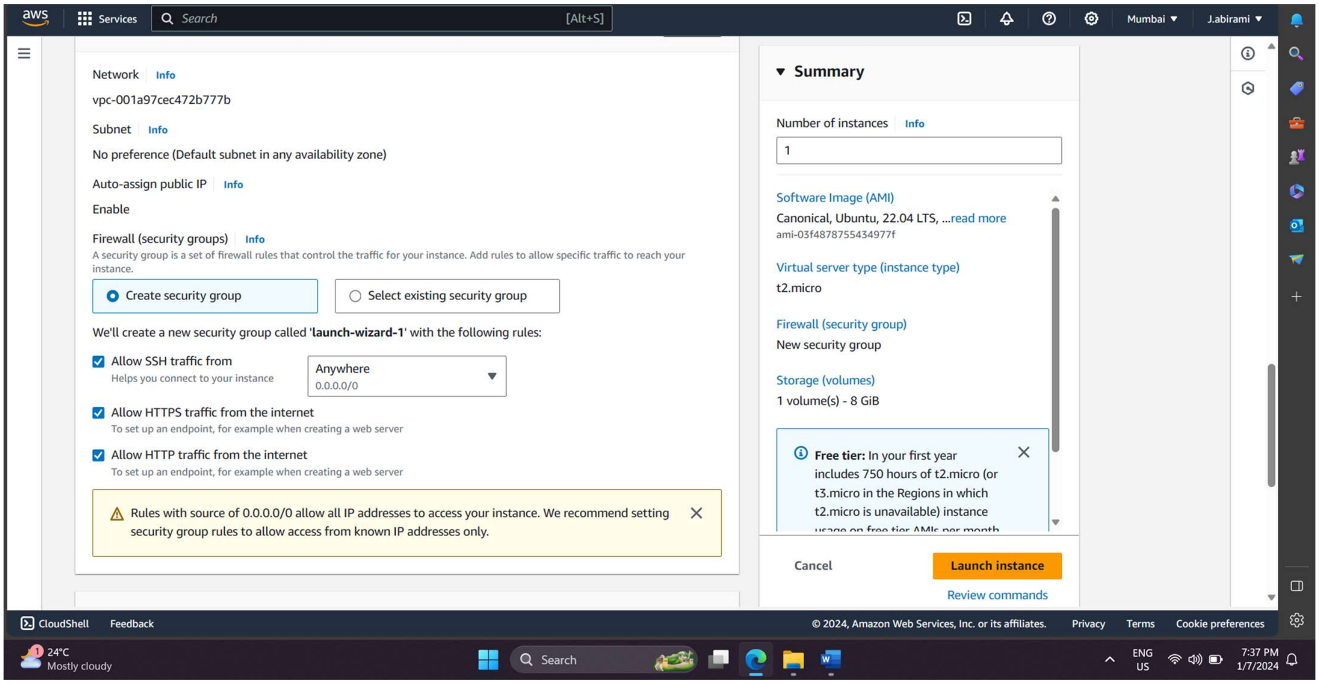
Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month

1.4. Configure Security Group

Configuring Security Group which allows basic protocols like SSH, HTTP, HTTPS.



Network Info

vpc-001a97cec472b777b

Subnet Info

No preference (Default subnet in any availability zone)

Auto-assign public IP Info

Enable

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

● Create security group ○ Select existing security group

We'll create a new security group called '**launch-wizard-1**' with the following rules:

☑ Allow SSH traffic from
Helps you connect to your instance
Anywhere
0.0.0.0/0

☑ Allow HTTPS traffic from the internet
To set up an endpoint, for example when creating a web server

☑ Allow HTTP traffic from the internet
To set up an endpoint, for example when creating a web server

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

▼ Summary

Number of instances Info

1

Software Image (AMI)
Canonical, Ubuntu, 22.04 LTS, ...read more
ami-03f4878755434977f

Virtual server type (instance type)
t2.micro

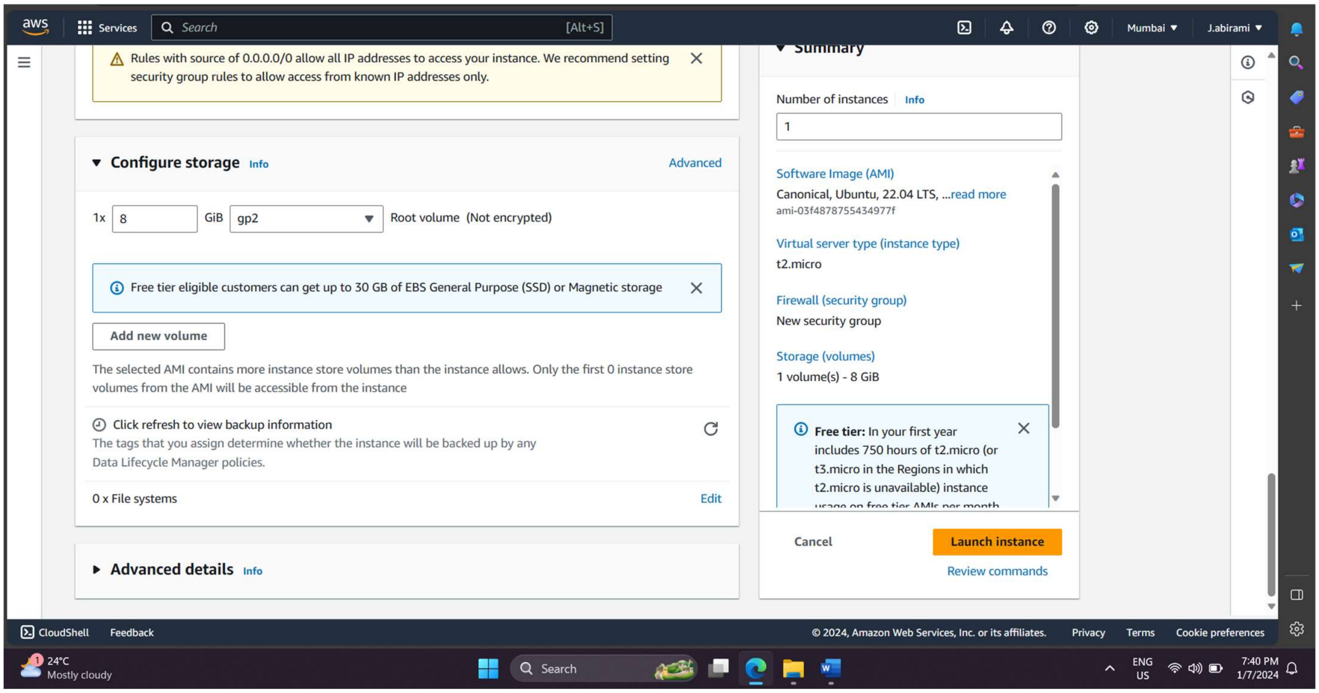
Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month

Cancel
Launch instance
Review commands

1.5. Configure Network setting and Storage as default



⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

▼ Configure storage Info Advanced

1x 8 GiB gp2 Root volume (Not encrypted)

ⓘ Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance

Click refresh to view backup information
The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.

0 x File systems Edit

▶ Advanced details Info

▼ Summary

Number of instances Info

1

Software Image (AMI)
Canonical, Ubuntu, 22.04 LTS, ...read more
ami-03f4878755434977f

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New security group

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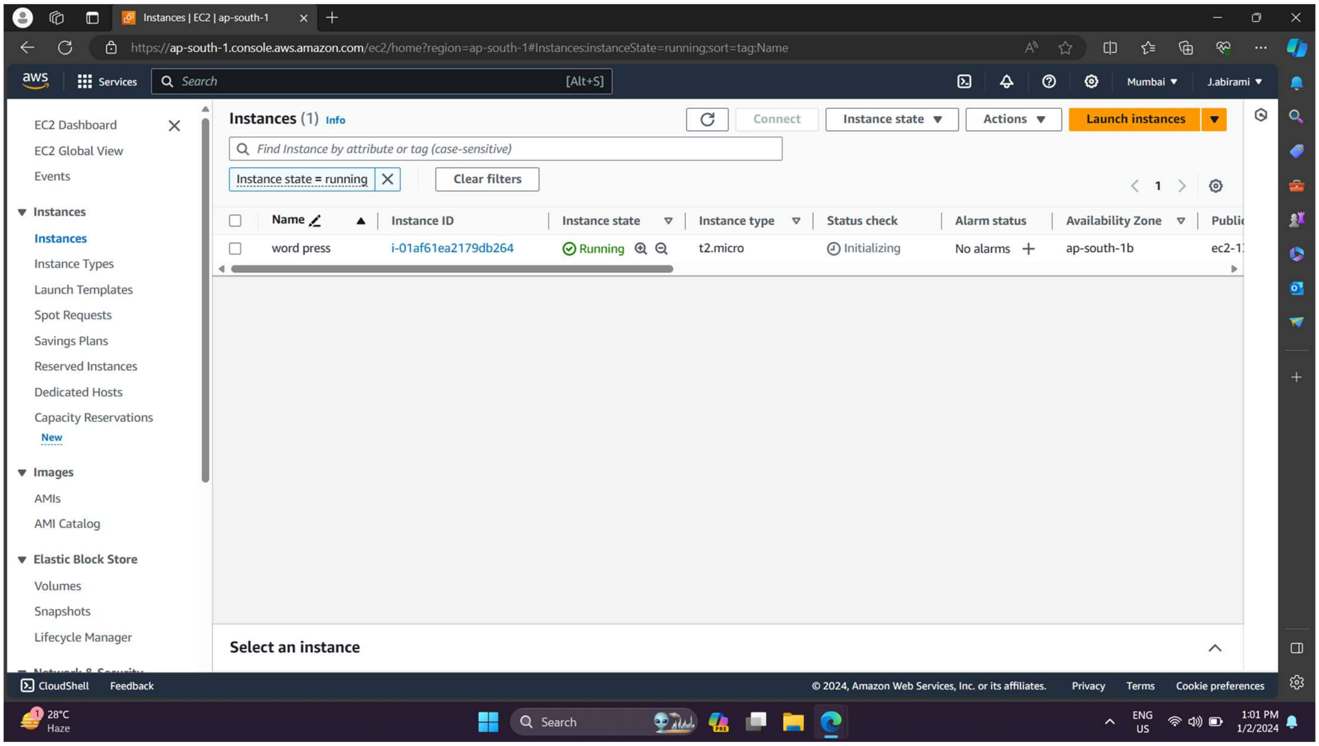
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month

Cancel
Launch instance
Review commands

1.6. Launch Instance

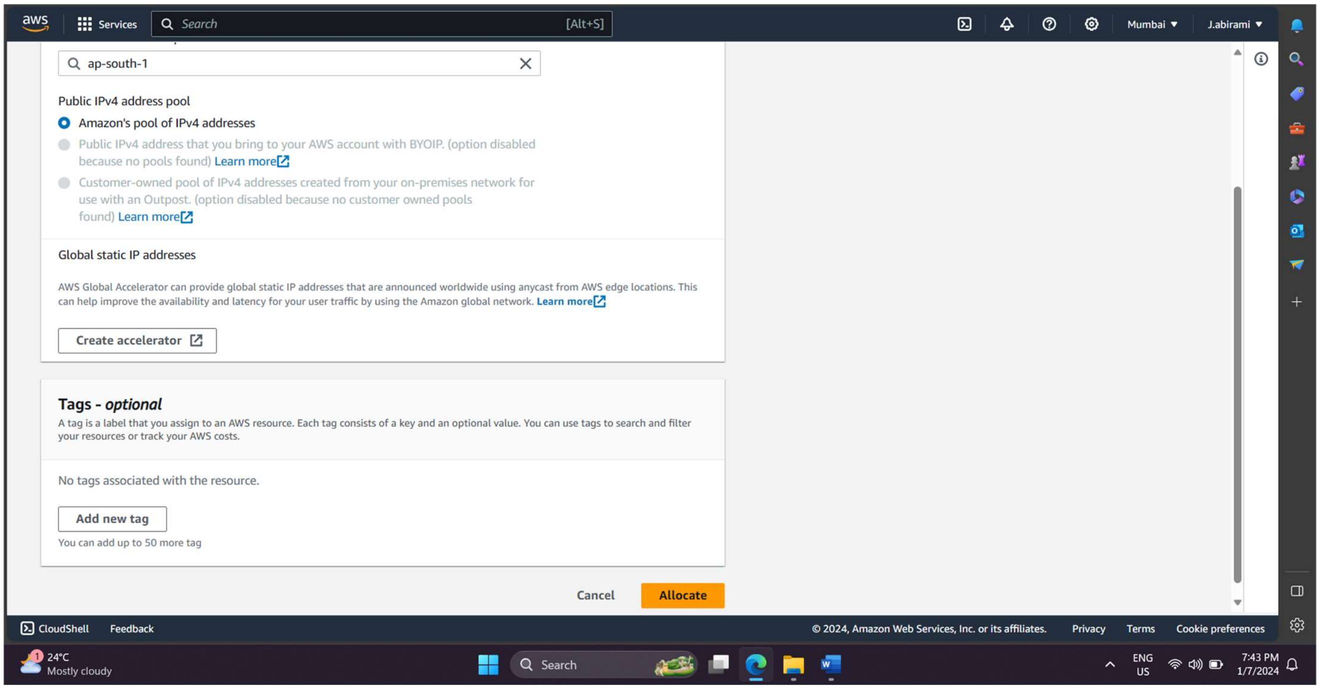


Instances (1) Info

Instance state = running

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public
word press	i-01af61ea2179db264	Running	t2.micro	Initializing	No alarms	ap-south-1b	ec2-1

2. Create and assign Elastic IP to Wordpress instance



ap-south-1

Public IPv4 address pool

- ● Amazon's pool of IPv4 addresses
- ○ Public IPv4 address that you bring to your AWS account with BYOIP. (option disabled because no pools found) Learn more
- ○ Customer-owned pool of IPv4 addresses created from your on-premises network for use with an Outpost. (option disabled because no customer owned pools found) Learn more

Global static IP addresses

AWS Global Accelerator can provide global static IP addresses that are announced worldwide using anycast from AWS edge locations. This can help improve the availability and latency for your user traffic by using the Amazon global network. Learn more

Tags - *optional*

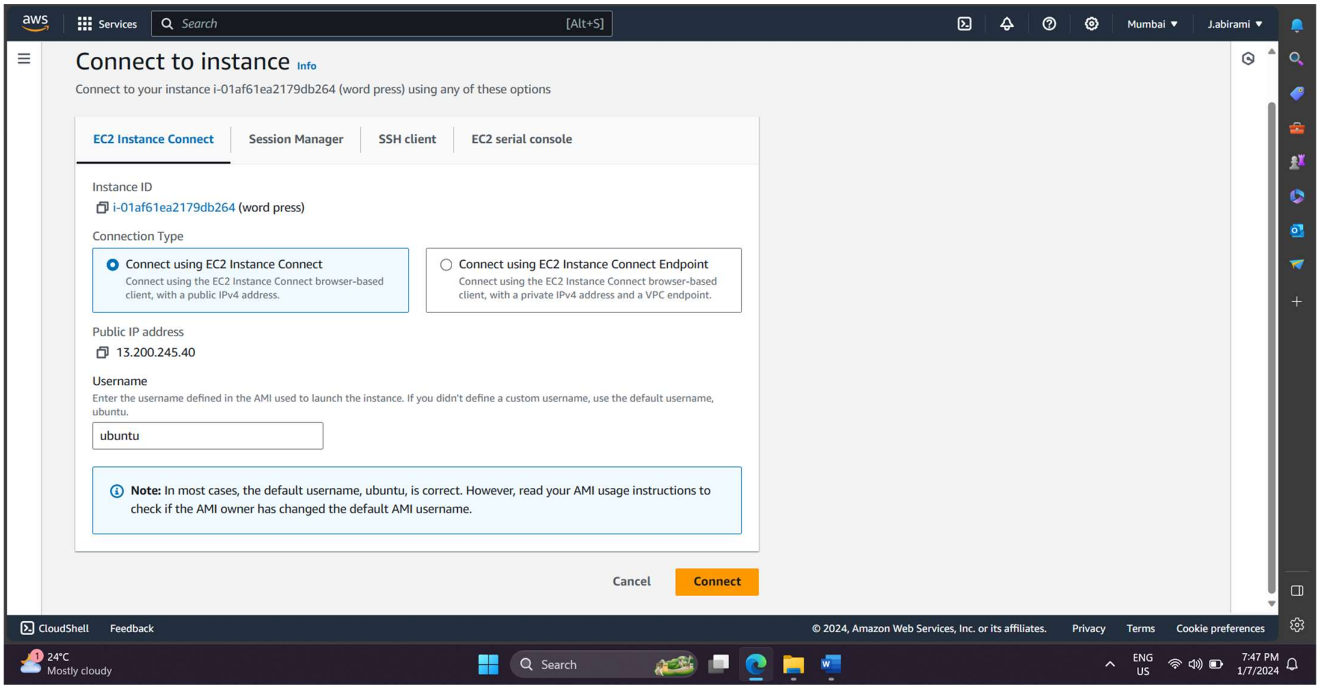
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

You can add up to 50 more tag

By using an Elastic IP address, you can mask the failure of an instance or software by rapidly remapping the address to another instance in your account.

3. Connect to the instance:



Connect to instance Info

Connect to your instance i-01af61ea2179db264 (word press) using any of these options

Instance ID

i-01af61ea2179db264 (word press)

Connection Type

● Connect using EC2 Instance Connect
Connect using the EC2 Instance Connect browser-based client, with a public IPv4 address.

○ Connect using EC2 Instance Connect Endpoint
Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.

Public IP address

13.200.245.40

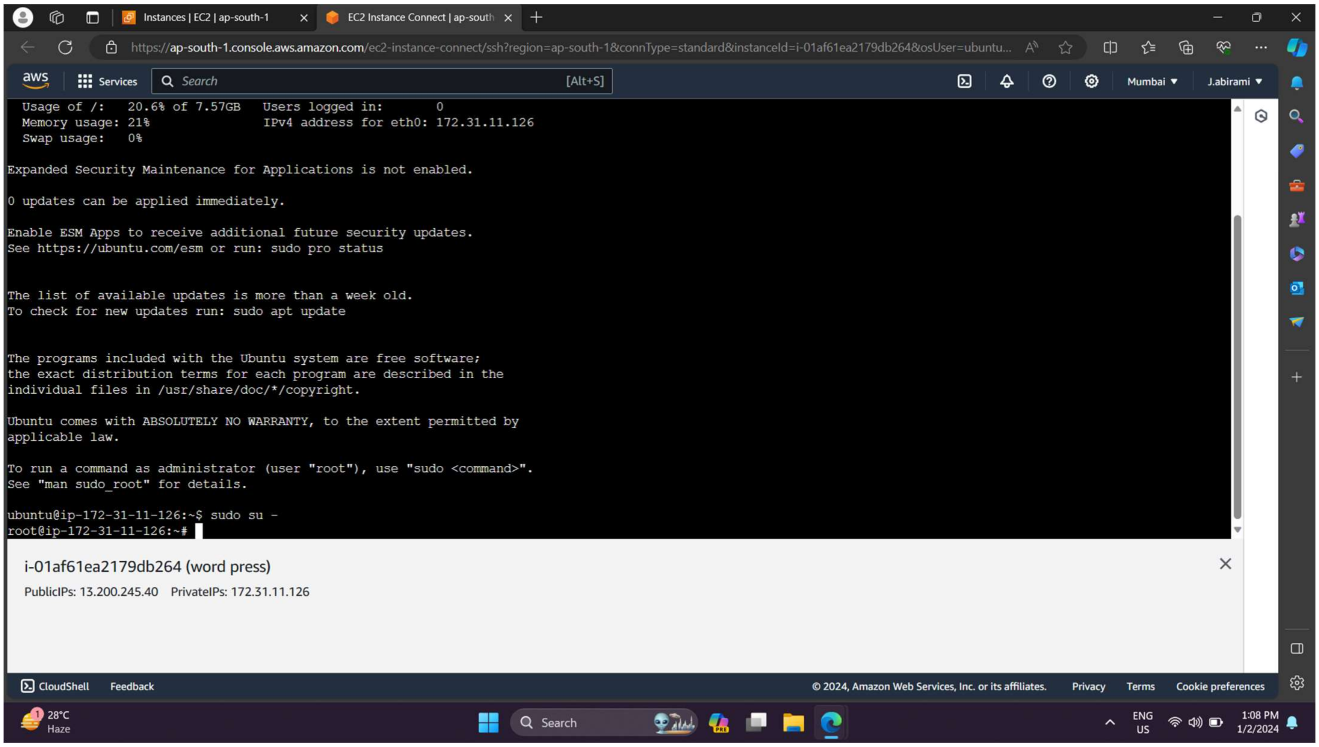
Username

Enter the username defined in the AMI used to launch the instance. If you didn't define a custom username, use the default username, ubuntu.

ubuntu

Note: In most cases, the default username, ubuntu, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

Cancel
Connect
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
24°C
Mostly cloudy
Search
ENG
US
7:47 PM
1/7/2024


Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
https://ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-01af61ea2179db264&osUser=ubuntu...
aws
Services
Search
[Alt+S]
Mumbai ▼
J.abirami ▼

```
  Usage of /:   20.6% of 7.57GB   Users logged in:       0
  Memory usage: 21%               IPv4 address for eth0: 172.31.11.126
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-11-126:~$ sudo su -
root@ip-172-31-11-126:~#
```

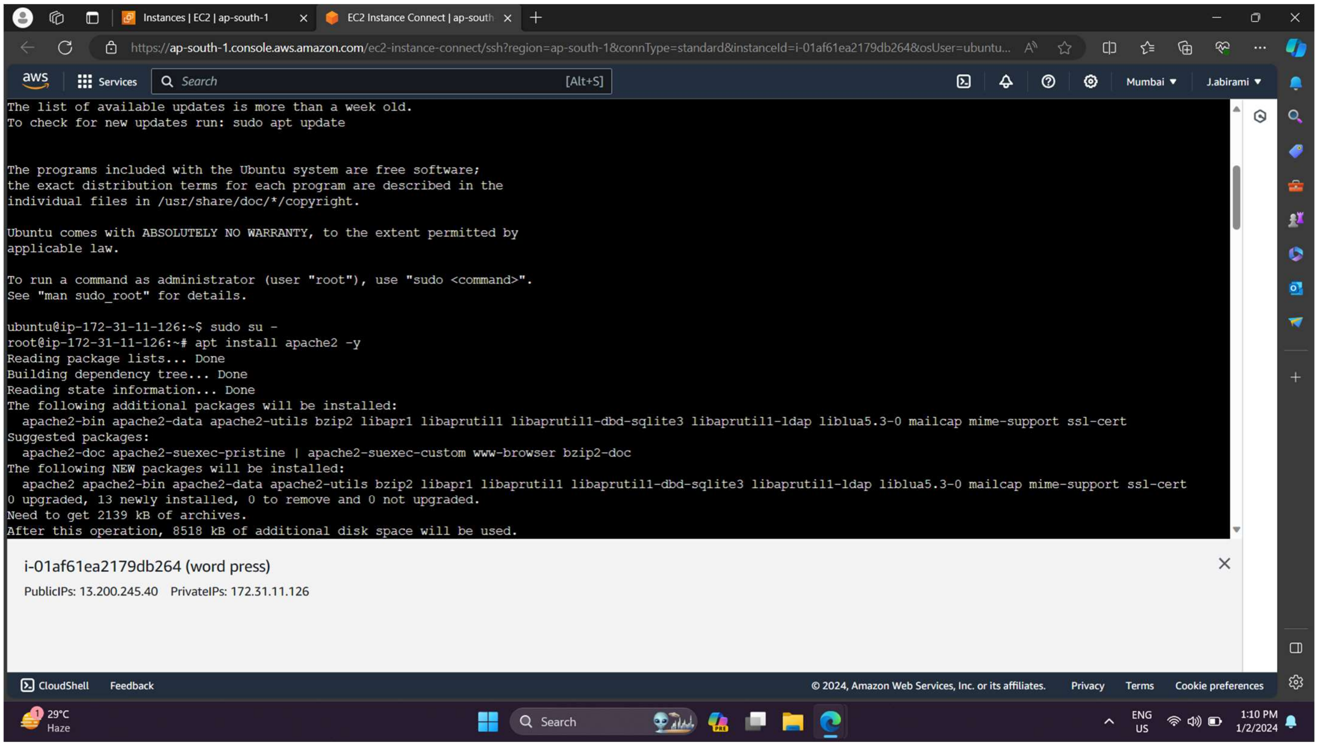
i-01af61ea2179db264 (word press)

PublicIPs: 13.200.245.40 PrivateIPs: 172.31.11.126

4. Install Apache:

Code: apt install apache2 -y

Systemctl status apache2


Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
https://ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-01af61ea2179db264&osUser=ubuntu...
aws
Services
Search
[Alt+S]
Mumbai
J.abirami
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
29°C
Haze
Search
ENG
US
1:10 PM
1/2/2024

```
The list of available updates is more than a week old.
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applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-11-126:~$ sudo su -
root@ip-172-31-11-126:~# apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser bzip2-doc
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
0 upgraded, 13 newly installed, 0 to remove and 0 not upgraded.
Need to get 2139 kB of archives.
After this operation, 8518 kB of additional disk space will be used.
```
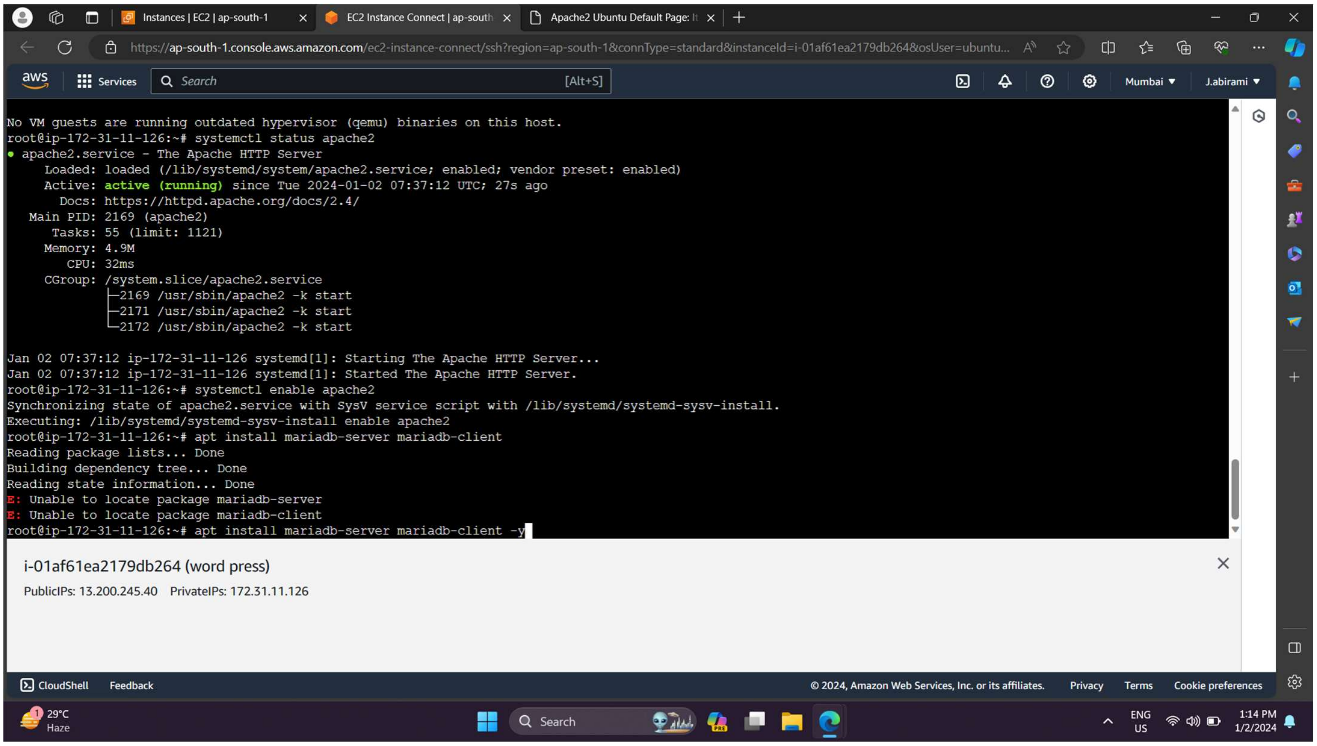

i-01af61ea2179db264 (word press)

PublicIPs: 13.200.245.40 PrivateIPs: 172.31.11.126

5. Install MySQL

Code: apt install mariadb-server mariadb-client -y


Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
Apache2 Ubuntu Default Page: It
https://ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-01af61ea2179db264&osUser=ubuntu...
aws
Services
Search
[Alt+S]
Mumbai
J.abirami
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
29°C
Haze
Search
ENG
US
1:14 PM
1/2/2024

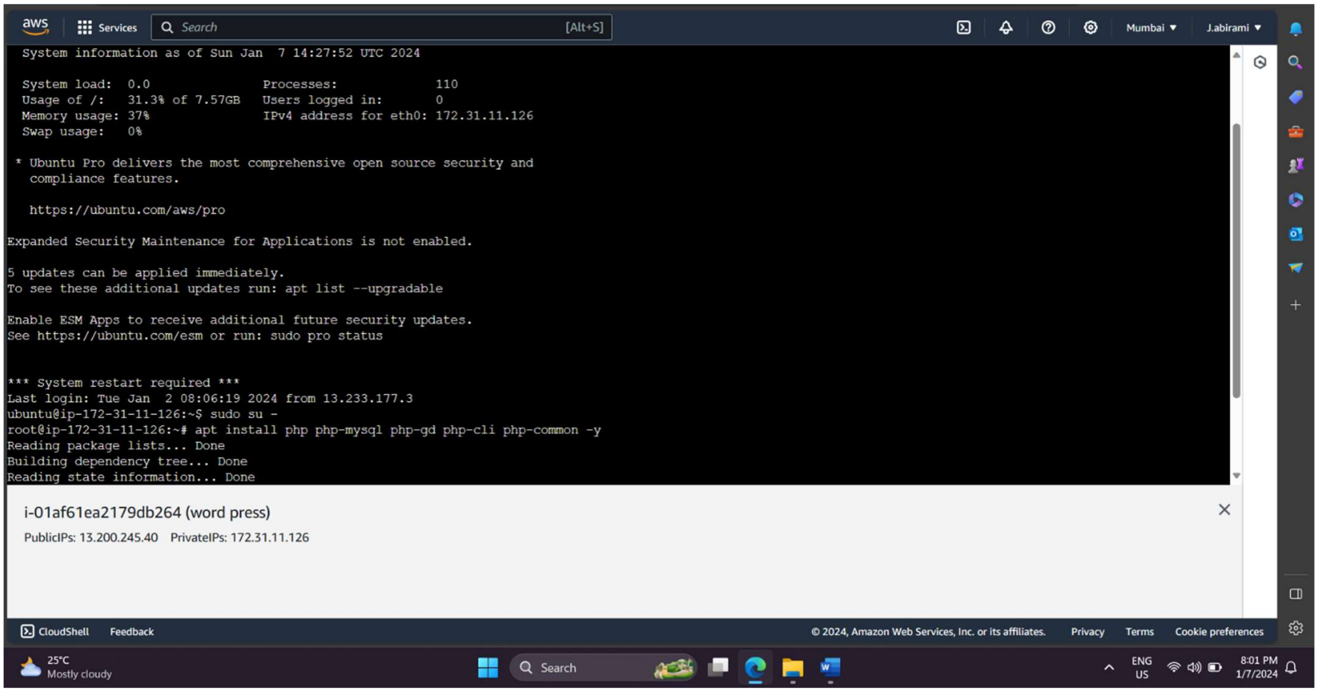
```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-11-126:~# systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Tue 2024-01-02 07:37:12 UTC; 27s ago
       Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2169 (apache2)
      Tasks: 55 (limit: 1121)
     Memory: 4.9M
        CPU: 32ms
     CGroup: /system.slice/apache2.service
             ├─2169 /usr/sbin/apache2 -k start
             ├─2171 /usr/sbin/apache2 -k start
             └─2172 /usr/sbin/apache2 -k start

Jan 02 07:37:12 ip-172-31-11-126 systemd[1]: Starting The Apache HTTP Server...
Jan 02 07:37:12 ip-172-31-11-126 systemd[1]: Started The Apache HTTP Server.
root@ip-172-31-11-126:~# systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
root@ip-172-31-11-126:~# apt install mariadb-server mariadb-client
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package mariadb-server
E: Unable to locate package mariadb-client
root@ip-172-31-11-126:~# apt install mariadb-server mariadb-client -y
```

i-01af61ea2179db264 (word press)

PublicIPs: 13.200.245.40 PrivateIPs: 172.31.11.126

6. Install PHP extension:

Code: apt install php php-mysql php-gd php-cli php-common -y



```
 System information as of Sun Jan  7 14:27:52 UTC 2024

 System load:  0.0               Processes:             110
 Usage of /:   31.3% of 7.57GB   Users logged in:       0
 Memory usage: 37%               IPv4 address for eth0: 172.31.11.126
 Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

5 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


*** System restart required ***
Last login: Tue Jan  2 08:06:19 2024 from 13.233.177.3
ubuntu@ip-172-31-11-126:~$ sudo su -
root@ip-172-31-11-126:~# apt install php php-mysql php-gd php-cli php-common -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

i-01af61ea2179db264 (word press)

PublicIPs: 13.200.245.40   PrivateIPs: 172.31.11.126

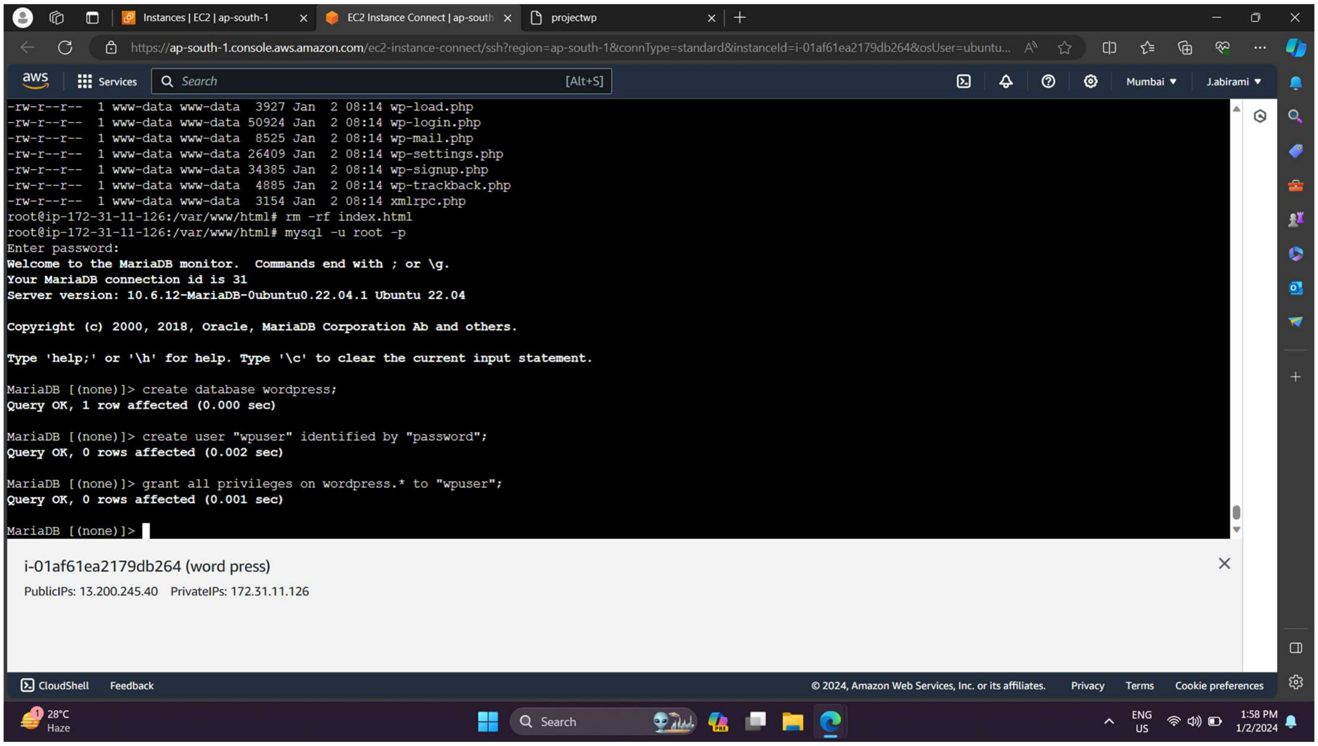
7. Download wordpress:

Code: wget https://wordpress.org/latest.zip

8. Move the wordpress files

   Code: cp -r wordpress/* /var/www/html/

9. Create Database:



```
-rw-r--r--  1 www-data www-data  3927 Jan  2 08:14 wp-load.php
-rw-r--r--  1 www-data www-data 50924 Jan  2 08:14 wp-login.php
-rw-r--r--  1 www-data www-data  8525 Jan  2 08:14 wp-mail.php
-rw-r--r--  1 www-data www-data 26409 Jan  2 08:14 wp-settings.php
-rw-r--r--  1 www-data www-data 34385 Jan  2 08:14 wp-signup.php
-rw-r--r--  1 www-data www-data  4885 Jan  2 08:14 wp-trackback.php
-rw-r--r--  1 www-data www-data  3154 Jan  2 08:14 xmlrpc.php
root@ip-172-31-11-126:/var/www/html# rm -rf index.html
root@ip-172-31-11-126:/var/www/html# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 31
Server version: 10.6.12-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database wordpress;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> create user "wpuser" identified by "password";
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> grant all privileges on wordpress.* to "wpuser";
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]>
```

i-01af61ea2179db264 (word press)

PublicIPs: 13.200.245.40   PrivateIPs: 172.31.11.126

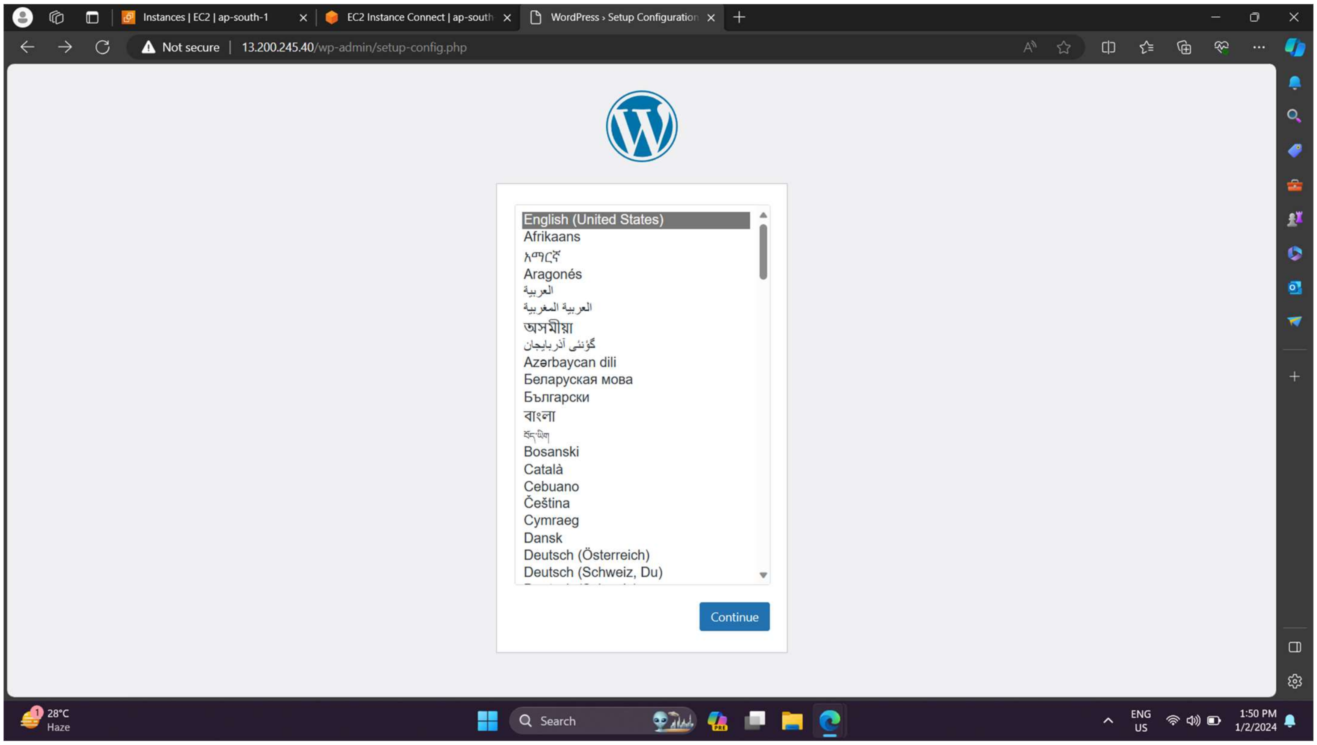
Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
projectwp
https://ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-01af61ea2179db264&osUser=ubuntu...
aws
Services
Search
[Alt+S]
Mumbai
J.abirami
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
28°C
Haze
Search
ENG
US
1:58 PM
1/2/2024

Code: Create database wordpress;

Create user “wpuser” identified by “password”;

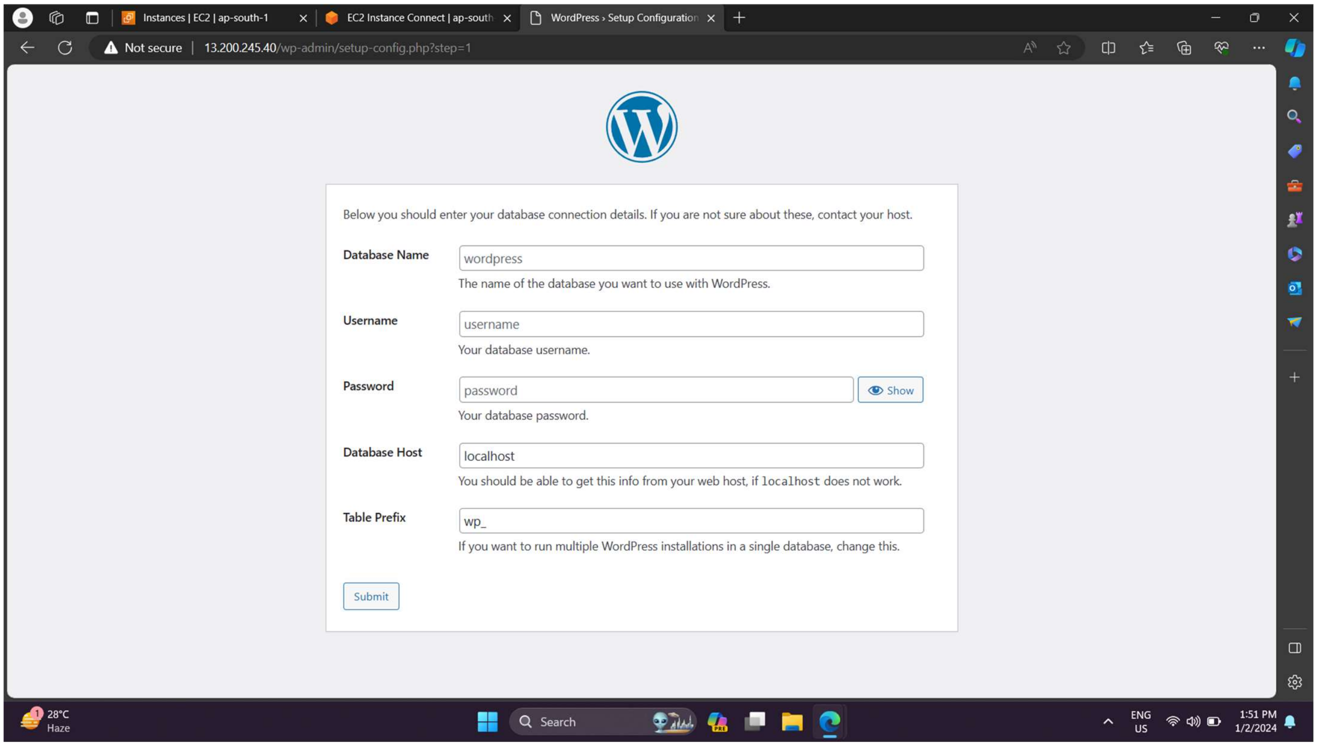
Grant all privilages on wordpress.* to “wpuser”;

10.Deploy Wordpress:


Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
WordPress › Setup Configuration
Not secure
13.200.245.40/wp-admin/setup-config.php
28°C
Haze
Search
ENG
US
1:50 PM
1/2/2024

English (United States)
Afrikaans
አማርኛ
Aragonés
العربية
العربية المغربية
অসমীয়া
گؤنئی آذربایجان
Azərbaycan dili
Беларуская мова
Български
বাংলা
བོད་ཡིག
Bosanski
Català
Cebuano
Čeština
Cymraeg
Dansk
Deutsch (Österreich)
Deutsch (Schweiz, Du)

Continue

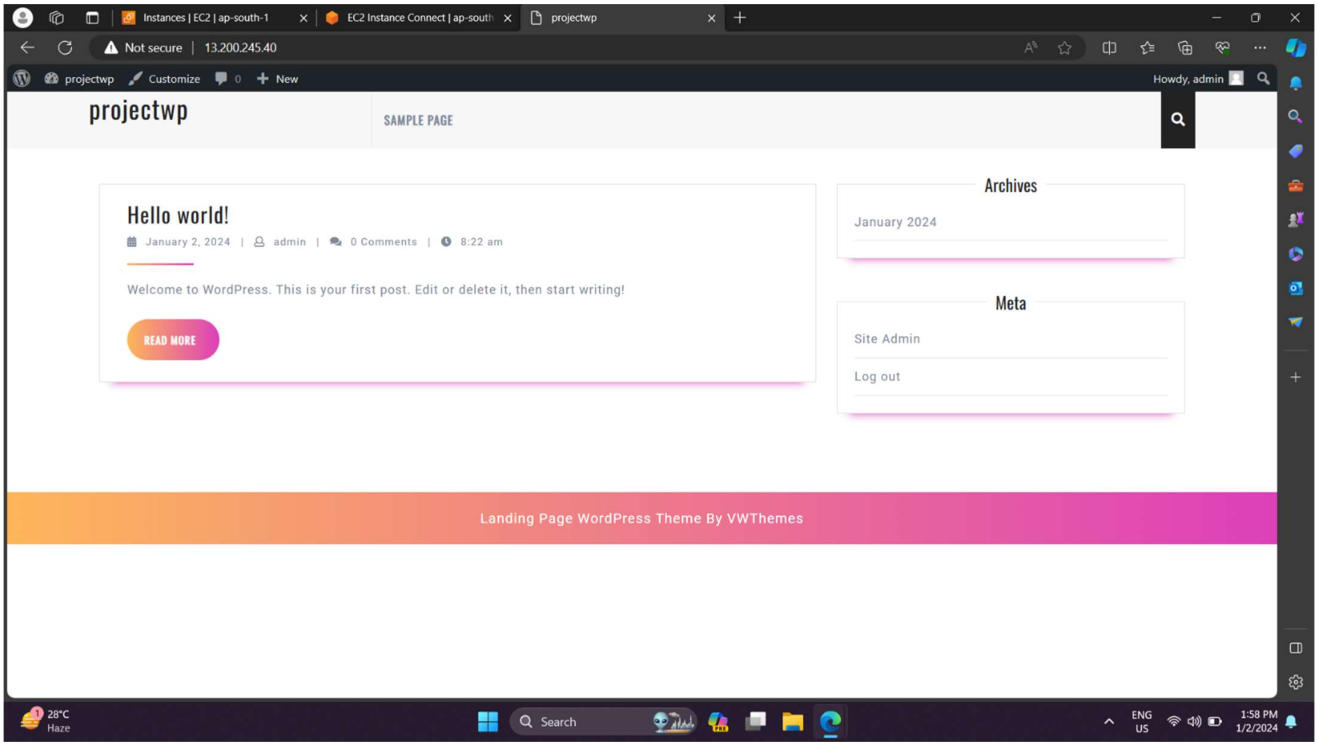

Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
WordPress › Setup Configuration
Not secure
13.200.245.40/wp-admin/setup-config.php?step=1
28°C
Haze
Search
ENG
US
1:51 PM
1/2/2024

Below you should enter your database connection details. If you are not sure about these, contact your host.

Database Name	wordpress The name of the database you want to use with WordPress.	
Username	username Your database username.	
Password	password Your database password.	Show
Database Host	localhost You should be able to get this info from your web host, if `localhost` does not work.	
Table Prefix	wp_ If you want to run multiple WordPress installations in a single database, change this.	

Submit

11.Create a Welcome page:



Hello world!

January 2, 2024 | admin | 0 Comments | 8:22 am

Welcome to WordPress. This is your first post. Edit or delete it, then start writing!

Archives

January 2024

Meta

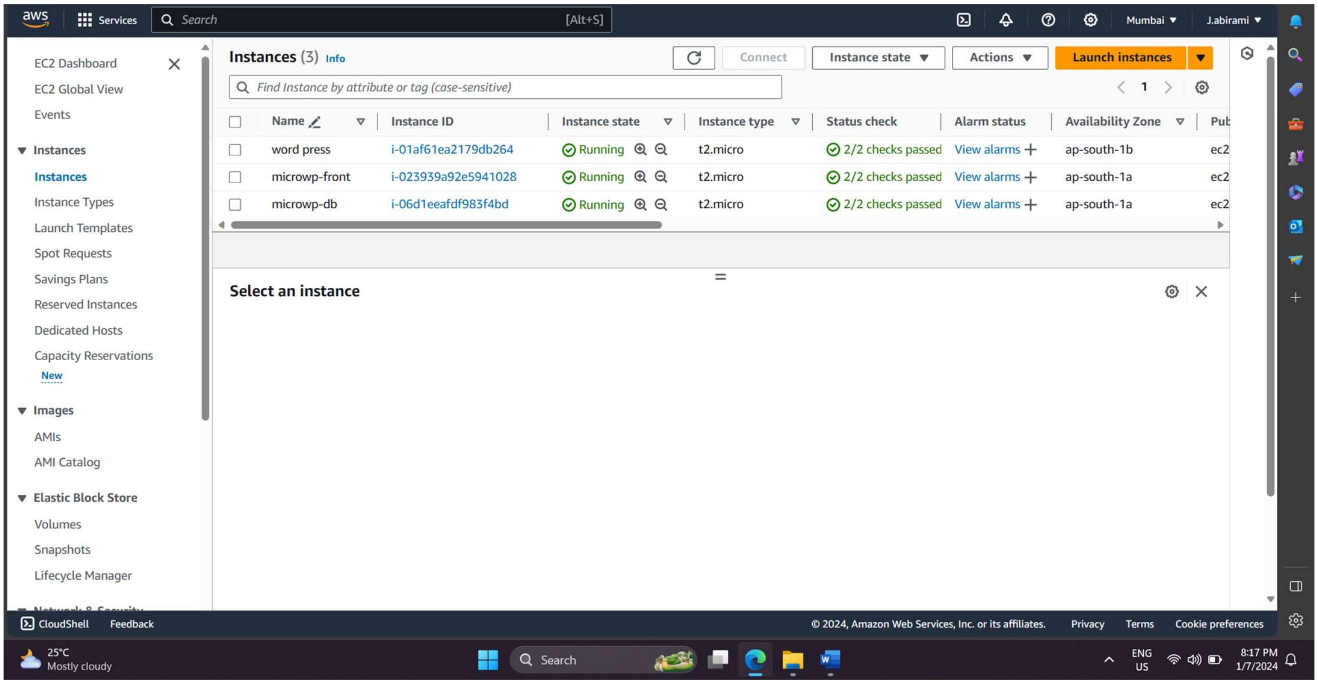
Site Admin

Log out

Landing Page WordPress Theme By VWThemes

MICROSERVICES:

1. **Create 2 EC 2 instances**
   Instance 1: microwp-front
   Instance 2: microwp-db



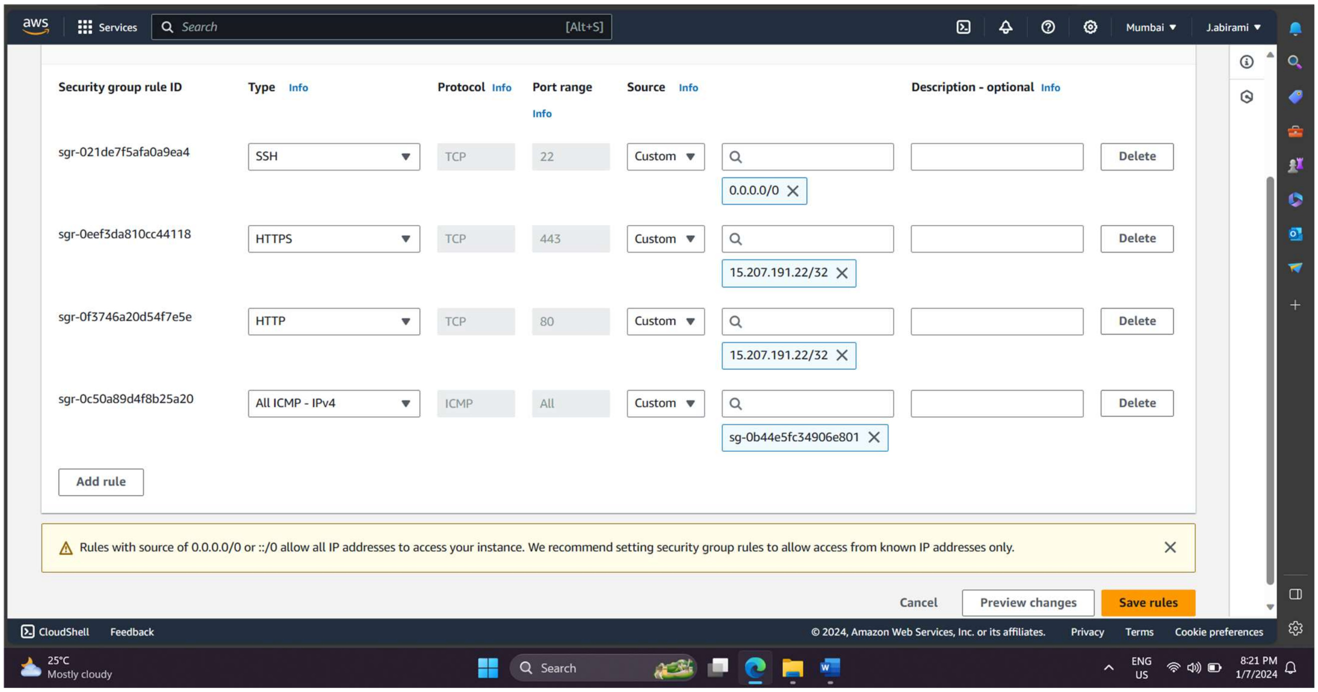
Instances (3) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Pub
□	word press	i-01af61ea2179db264	Running	t2.micro	2/2 checks passed	View alarms +	ap-south-1b	ec2
□	microwp-front	i-023939a92e5941028	Running	t2.micro	2/2 checks passed	View alarms +	ap-south-1a	ec2
□	microwp-db	i-06d1eeafdf983f4bd	Running	t2.micro	2/2 checks passed	View alarms +	ap-south-1a	ec2

Select an instance

2. Configure security Group:

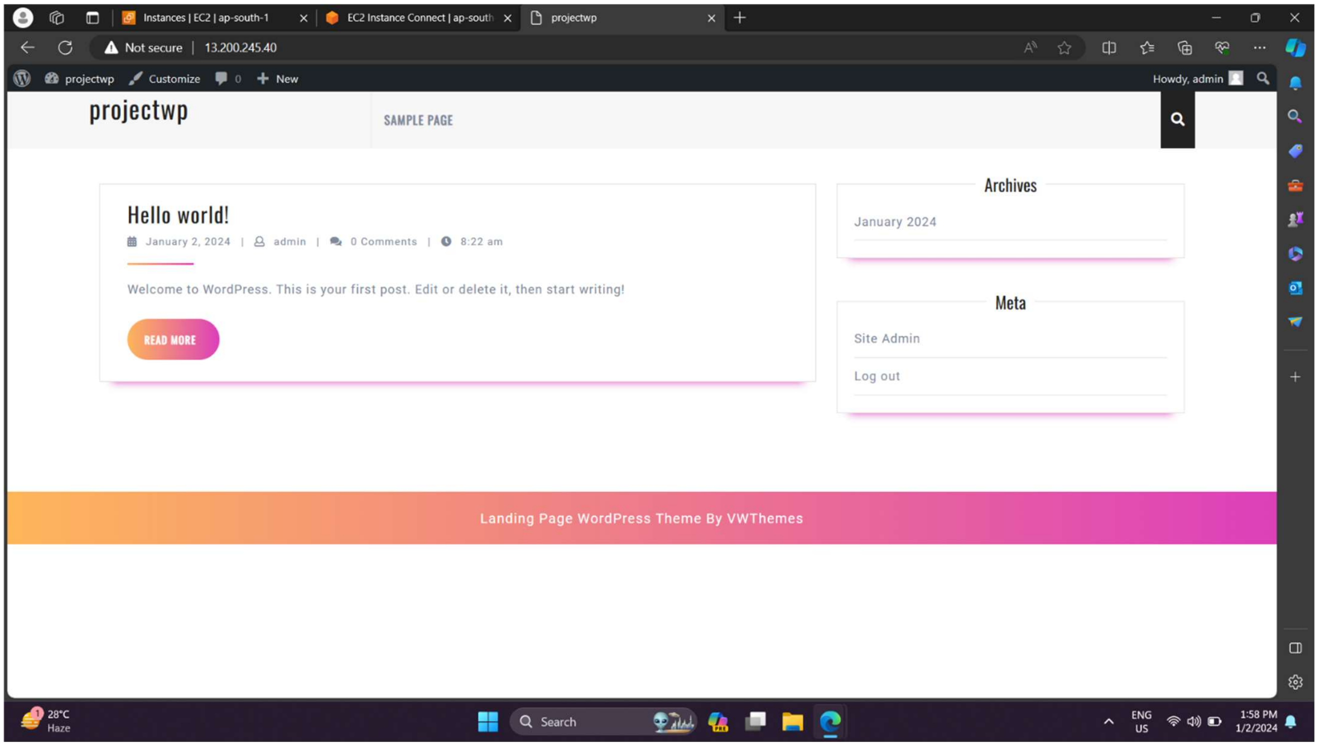
We configure the security group of both the instances allowing the respective security group by changing the inbound rules.



Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sgr-021de7f5afa0a9ea4	SSH	TCP	22	Custom 0.0.0.0/0	
sgr-0eef3da810cc44118	HTTPS	TCP	443	Custom 15.207.191.22/32	
sgr-0f3746a20d54f7e5e	HTTP	TCP	80	Custom 15.207.191.22/32	
sgr-0c50a89d4f8b25a20	All ICMP - IPv4	ICMP	All	Custom sg-0b44e5fc34906e801	

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

3. We deploy wordpress on microwp-front instance.
4. We deploy mysql on microwp-db instance.
5. The Wordpress welcome page is deployed in microservices architecture successfully



Not secure | 13.200.245.40

projectwp

SAMPLE PAGE

Hello world!

January 2, 2024 | admin | 0 Comments | 8:22 am

Welcome to WordPress. This is your first post. Edit or delete it, then start writing!

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Landing Page WordPress Theme By VWThemes